

## **PORTABLE TENNIS BACKBOARD**

### **BACKGROUND OF THE INVENTION**

[0001] The use of a wall, or any suitable substantially vertical surface, to hit tennis strokes against enables a player to practice by himself or herself. Such a surface used for practicing strokes is commonly referred to as a "backboard," and is used by tennis players to improve the form and consistency of their game. Usually lines are painted on the backboard to indicate the top and center strap of the net, that is, where the top and center strap would be if the backboard were actually a net on a tennis court. Most backboards are planar and nominally vertical structures, but variant designs can employ slanted, curved, or uneven surfaces so that the ball comes off at various angles or with various types of spin. Present-day backboards have been engineered to be much quieter than those of the past through the use of fiberglass and plastics such as Styrofoam. Although backboards have in the main been used for practicing tennis, with suitable modifications they could be employed for any sport involving the propulsion by the player of the ball or other projectile used in the sport. Some obvious examples include handball and racquetball.

[0002] These backboards, however, are usually large and difficult to maneuver. Or the structures are small and do not allow adequate space for practicing tennis strokes.

[0003] The following U.S. patents describe various backboards or practice devices that may be relevant to the present invention.

[0004] U.S. Pat. No. 3,697,068 is directed to a wall structure for practicing tennis. The structure provides a rebound surface that is non-planar.

[0005] U.S. Pat. No. 4,093,218 is directed towards a modular ball rebound apparatus comprised of a plurality of panels for removable mounting on an easel, which is adjustable.

[0006] U.S. Pat. No. 4,373,720 is directed towards a tennis backboard that is supported by an object such as a fence. It is constructed from a plurality of panels, which are concave and formed from polyurethane material. The panels of the backboard are fastened together.

[0007] U.S. Pat. No. 4,491,321 is directed toward an improved playing wall that is layered and made from two sections. U-shaped supports extend around the periphery of each section of the wall. Support fins flare out on either side of the wall.

[0008] U.S. Pat. No. 5,354,051 depicts a rebound board for returning projected balls. The invention can be attached to an environmental surface or attached to a supporting frame so that it can be erected and used on a playing court.

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## **SUMMARY OF THE INVENTION**

[0009] The invention comprises a portable tennis backboard for the practice of tennis by one or more persons. In addition to being portable, the portable tennis backboard is free-standing and modular in construction. A typical unit may include two vertical modules, connected together horizontally with hinges which allow the unit to be folded into a  
10 manageable size for portability. More than two modules may be connected together in similar fashion to provide a wider backboard or one module could be used by itself.

[0010] The portable tennis backboard module has a tennis ball reflective surface which is rectangular in size wherein the major axis is approximately twice the length of the minor axis; as for example approximately four feet wide and eight feet high. The module is  
15 mounted such that its major axis is in the vertical position on a base approximately the dimension of the minor axis in width and about half the amount in depth. For example, the base can be 4 feet wide by 2 feet deep forming a rectangular base. Rolling means enabling the backboard to be readily moved alone are located beneath the base. For example, 4 swiveling casters can be attached to the corners. Alternately wheels, rollers, or other rolling  
20 means can be used for this purpose. The base and reflecting surface are held together by anterior and posterior gussets. The base is stiffened in the anterior-posterior direction by vertical stiffening gussets attached to the anterior and posterior edges of the upright reflecting surface on each side. Each of these gussets is permanently joined to the reflecting surface on either the lateral or medial edge, and on the anterior and posterior faces of the reflecting  
25 surface. These gussets are also attached to the base, and provide torsional stiffness in the anterior-posterior plane. The base is stiffened in the medial-lateral plane by the reflecting surface itself. Any suitable joining or attachment means can be used for this purpose such as bolts, screws, nails, adhesive, or combination thereof.

[0011] The reflecting surface of each component module, which faces the user, is  
30 painted in a color of choice, usually green, and is marked with a painted white stripe, the top border of which is typically about 36" above the ground. This stripe is intended to represent the top border of a net on a standard tennis court and can be referred to as the "net stripe".

[0012] Each reflecting surface is stiffened in the anterior-posterior plane by the above-described stiffening gussets, which run substantially the entire vertical length of the reflecting surface on the posterior aspect of the reflecting surface, and from the base up to a distance not greater than about 36" from the base on the anterior surface, i.e., below the net  
5 simulating stripe. Thus, a pair of stiffening gussets generally are half the depth of the base and are attached at the rear of the reflecting surface. Another pair of shorter gussets not usually higher than 36" from the base are attached at the front of the reflecting surface; one gusset along each side edge of the reflecting surface of the module. At its base, the width of the gusset is about one-half the depth of the base. The stiffening gussets are edge-joined to  
10 the reflecting surface and provide torsional stiffness by virtue of the continuous edge joint. The joining can be by any suitable means such as typical connectors (e.g. screws) or adhesive or both. A reflecting surface is stiffened in the medial-lateral dimensions by the continuous edge-joint which attaches the reflecting surface to the base below the net stripe, and by a stiffener that runs the width of the reflecting surface at the top of the reflecting surface. This  
15 stiffener is edge-joined to the top or superior posterior edge of the reflecting surface only, to prevent aberrant reflection of the ball.

[0013] Modules are joined together by one or more hinges located on the posterior edge of the medial vertical stiffening gusset on each component module. Position of the hinge here allows the complete assembly of two modules to be folded along the vertical axis.  
20 The reflecting surfaces of modules are held together, when unfolded, by secure hasps providing tension and rigidity of the playing surface. When the assembled backboard is opened and unfolded with the hasps locked, a two-module portable tennis backboard, for example, measures approximately 8' high x 8' wide x 2' deep.

[0014] An important feature of the design is that the weight of the reflecting surface is  
25 centered in both horizontal directions over the base to minimize the chance of being tipped over by accident. Furthermore, the tapered shape of the gussets located at the rear sides of the playing surface allows for optimal weight distribution as well, with the majority of the weight being low near the base.

### 30 **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will be further understood with reference to the drawings, wherein:

[0015] Figure 1 depicts a front view of an embodiment of the claimed invention,

[0016] Figure 2 depicts a plan view of an embodiment of the claimed invention.

[0017] Figure 3 depicts a plan view of an embodiment of the claimed invention that is partially folded;

[0018] Figure 4 depicts a plan view of an embodiment of the claimed invention that is  
5 fully folded;

[0019] Figure 5 depicts a side view of an embodiment of the claimed invention; and

[0020] Figure 6 depicts a rear view of an embodiment of the claimed invention.

### **DETAILED DESCRIPTION**

10 [0021] Figure 1 depicts a front elevation view of a portable tennis backboard (1) of modular construction that is freestanding. The depicted embodiment demonstrates a portable tennis backboard (1) formed from a first module (2) and a second module (2a), which are each approximately four feet wide and eight feet high. However, different sizes of modules can be utilized. The modules can be constructed from a variety of materials, such as wood,  
15 fiberglass, synthetic materials, metal, and a variety of combinations thereof.

[0022] The depicted embodiment shows a first anterior gusset (4) and a second anterior gusset (5) attached to the reflecting surface (20) of module 1. In the depicted embodiment, the first anterior gusset (4) and the second anterior gusset (5) are attached to the lateral edge (6) and medial edge (7) of the reflecting surface (20), which has a tennis net  
20 height indicator (21) formed approximately 36 inches above ground level on the front side (22) of the reflecting surface (20). The indicator (21) can be a stripe, an indicium, or an altered area that delineates the reflecting surface (20). The indicator (21) can be placed so that it relates to the height of the net or can be set at another height to delineate the reflecting surface (20), such as half the height of the reflecting surface. The attachment of the gussets  
25 (4, 5) to the lateral edge (6) and/or medial edge (7) can either be permanent or removable in nature. In the illustrated embodiment, the gussets (4, 5) are edge-joined to the reflecting surface (20) so as to provide additional tension and stiffness. Each module has at least one gusset for support. In the illustrated embodiment, the first anterior gusset (4) and the second anterior gusset (5) stop at a height equal to or less than the height of the indicator (21). That  
30 is, the anterior gusset (4) and second anterior gusset (5) are approximately 36 inches or shorter when measured from ground level as shown in the depicted embodiment. The first anterior gusset (4) and the second anterior gusset (5) are also attached to the base (10). The

height and shape of the gussets (4, 5) as shown is triangular, or trapezoidal and assists in creating a bottom-weight distribution. The shape of the gussets can varied.

[0023] The base (10) typically measures approximately 4 feet wide and 2 feet wide. Although, one skilled in the art would recognize that the base (10) could be a variety of different sizes, and shapes. Furthermore, the base (10) can be made from a variety of materials, for example, wood, plastic or composite. Swiveling casters (11) or other rolling means are attached to the base. In the depicted embodiment, four casters (11) are provided at each corner of the base (10). The casters (11) allow a person to maneuver the portable tennis backboard (1). Other means besides a caster could be utilized that that allow the portable tennis backboard (1) to be easily maneuvered. Locking means for the rolling means can be provided to hold the back board in place once it is set up. Locking means for the rolling means can be provided to hold the back board in place once it is set up. Posts or some other form of stationary support could be utilized instead of casters.

[0024] Figure 2 depicts plan view of the portable tennis backboard (1) formed from a first module (2) and a second module (2a). Base (10) supports the reflecting surface (20) of the first module (2) and base (10a) supports the reflecting surface (20a) of the second module (2a). The first anterior gusset (4) and second anterior gusset (5) are attached to the front lateral (6) and medial (7) edges of the reflecting surface (20). Further support is provided to the reflecting surface (20) by a first posterior gusset (8) and a second posterior gusset (9) located respectively on the lateral edge (6) and medial edge (7) on the rear side (23) of the reflecting surface (20). The illustrated embodiment utilizes a total of four gussets per module to provide torsional stiffness in the anterior-posterior plane through the use of edge-joints, which can be continuous in nature. Further stiffness is given to the base (10) in the medial-lateral plane by the attachment of the reflecting surface (20). Stiffness is also improved through the use of a stiffener, such as a front stiffener (25) and a rear superior stiffener (26). The rear superior stiffener (26) is edge-joined to the superior or top posterior edge of the reflecting surface (20) so as to prevent aberrant reflection of a ball.

[0025] The first module (2) and second module (2a) can be connected by a first hinge (3) located on the second posterior gusset (9). This allows the first module (2) and second module (2a) to be folded for storage and transportation as shown in Figures 3 and 4.

[0026] Figure 5 is a side view of module (2). Base (10) sits upon casters (11) and supports a reflecting surface (20). Further support is provided by the first anterior gusset (4), which is less than half the height of the reflecting surface (20) and can be about 1/3 the total

height of the reflecting surface (20). In the depicted embodiment, the first anterior gusset (4) would be 36 inches or less while the reflecting surface (20) would be approximately 96 inches in height. As detailed above, the anterior gusset (4) would not be located higher than the indicator (21) shown in Figure 1. This prevents aberrant reflections of balls that would be considered “in play”, while still providing stability to the reflecting surface (20). The first anterior gusset (4) and second anterior gusset (5) can have a tapered shape. The tapered shape creates more weight near the base (10) of the module (2). Alternative embodiments could include anterior gussets (4,5) that do not have a tapered shape because the height of the anterior gussets (4,5) still allows weight to be distributed near the base (10) of the portable tennis backboard (1). Furthermore, tapered or non-tapered shapes could be combined in practical applications.

[0027] The reflecting surface (20) also has posterior support provided by the first posterior gusset (8) and the second posterior gusset (9). The posterior gussets (8, 9) can run the entire vertical length of the reflecting surface (20).

15 [0028] The first posterior gusset (8) is shown in a break away view to depict the location of the first hasp (30). The first hasp (30) provides further structural tension and rigidity to the reflecting surface (20). The first posterior gusset (8) has a height almost equal to the height of the reflecting surface (20). Alternative embodiments include heights that are less than the height of the reflecting surface (20) or equal to the height of the reflecting surface (20). The depicted embodiment shows that the first posterior gusset (8) has a tapered shape allowing more weight to be located near the base (10). The depicted embodiment also shows that the second posterior gusset (9) does not have a tapered shape. Although the illustrated embodiment depicts a combined tapered/non-tapered shape for the posterior gussets (8, 9), it is possible to have any sort of combination of tapered/non-tapered shapes as long as there is at least the second posterior gusset (9), which can form a hinged connection with a posterior gusset (9a) on a second module. The depicted embodiment demonstrates that at least the first posterior gusset (8) has a tapered shape so more weight is located near the base (10). This allows the weight of the reflecting surface (20) to be centered in the horizontal direction and to be focused near the base (10) thereby minimizing the chances of being tipped over by accident.

[0029] Figure 6 represents a rear view of the portable tennis backboard (1). The first module (2) has a base (10) resting on casters (11), which supports a reflecting surface (20) having a rear side (23). The first posterior gusset (8) and second posterior gusset (9) are

located on the lateral and medial edges of the reflecting surface (20). Further support is provided by a rear superior stiffener (26) located towards the top of the reflecting surface (20) and an inferior or lower stiffener (29) located near the bottom of the reflecting surface (20).

5       **[0030]**       The first module (2) can be connected to the second module (2a) by a first hinge (3) and a second hinge (3a). The hinges (3, 3a) allows the first module (2) and second module (2a) to form a portable tennis backboard (1) that can folded along the vertical axis. Additional support is provided by a first hasp (30) and a second hasp (30a), which can lock together to keep the modules (2, 2a) in an open position. The depicted embodiment relies upon the module being connected by a pair of hinges and a pair of hasps, however, at least  
10       one connection part and/or one supporting part would be sufficient. For example, a hinge means can be used which locks in the unfolded condition to present a stable playing surface.

**[0031]**       It is possible to have additional modules to be connected together or to have one module be used alone. In the depicted embodiment, two modules (2, 2a) are utilized to provide a portable tennis backboard (1) that is approximately 8 feet high by 8 feet wide by 2  
15       feet deep. When folded, the dimensions would be 8 feet high by 4 feet wide by 4 feet deep.

**[0032]**       Further variations and modifications of the foregoing will be apparent to those skilled in the art and are intended to be encompassed by the claims appended hereto.